

CLAIMS

What is claimed is:

1. A junction plate assembly for undersea hydraulic couplings comprising:
 - (a) a first junction plate having a plurality of male hydraulic coupling members mounted thereto; the first junction plate having at least two sloped cam surfaces on opposing faces thereof;
 - (b) a second junction plate in spaced relation to the first junction plate and having a plurality of female coupling members mounted thereto; and
 - (c) a central shaft extending between the first and second junction plates, the central shaft rotating on an axis perpendicular to the faces of the first and second junction plates, the central shaft having at least two cam followers proximate one end thereof, the cam followers positioned to ride on the sloped cam surfaces upon rotation of the central shaft to change the spaced relation between the first and second junction plates.
2. The junction plate assembly of claim 1 wherein the sloped cam surfaces form arcs on the faces of the first junction plate.
3. The junction plate assembly of claim 1 wherein the second junction plate includes a central sleeve through which the central shaft extends, and the central shaft has at least one flange to limit axial movement of the central shaft with respect to the second junction plate.
4. The junction plate assembly of claim 1 comprising four sloped cam surfaces and four cam followers.
5. The junction plate assembly of claim 1 wherein the cam followers are attached to arms positioned on the central shaft.

6. The junction plate assembly of claim 1 further comprising at least one guide pin extending from the face of one of the junction plates, and at least one aperture in the other junction plate for insertion of the guide pin therein.

7. An apparatus for varying the spacing between a first manifold plate and a second manifold plate comprising:

(a) a pair of sloped cam surfaces on a first face of the first manifold plate, each of the sloped cam surfaces forming an arcuate path along the first face of the first manifold plate;

(b) a pair of sloped cam surfaces on a second face of the first manifold plate, each of the sloped cam surfaces forming an arcuate path along the second face of the first manifold plate;

(c) a central shaft extending between the first and second manifold plates perpendicular to the face of each manifold plate, the central shaft rotating on its axis perpendicular to the face of each manifold plate, the central shaft having a first arm on one end thereof adjacent the first face of the first manifold plate and a second arm spaced apart from the first arm and adjacent the second face of the first manifold plate, the central shaft having at least one flange adjacent the face of the second manifold plate substantially preventing axial movement of the second manifold plate along the axis of the central shaft; and

(d) a pair of cam followers mounted to the first arm on the central shaft and a pair of cam followers mounted to the second arm on the central shaft, the cam followers positioned to ride on the sloped cam surfaces during axial rotation of the central shaft whereby spacing between the faces of the first and second manifold plates may be varied.

8. The apparatus of claim 7 wherein each sloped cam surface forms an arc of about 120 degrees along a face of the first manifold plate.

9. The apparatus of claim 7 further comprising at least one guide pin on one of the manifold plates and at least one aperture in the other manifold plate for insertion of the guide pin therein.

10. The apparatus of claim 7 further comprising a sleeve attached to the second manifold plate through which the central shaft extends, the flange on the central shaft abutting the sleeve to block axial movement of the second manifold plate with respect to the central shaft.

11. The apparatus of claim 7 wherein each of the sloped cam surfaces includes detents adjacent at least one end thereof.

12. An apparatus for engaging or disengaging a plurality of hydraulic coupling members mounted to the faces of opposing first and second junction plates, comprising:

- (a) a central shaft having a first end and a second end, the central shaft extending through an aperture in each of the first and second junction plates, the central shaft being perpendicular to the faces of the first and second junction plates and having at least one flange intermediate the central shaft adjacent the face of the second junction plate, the second end of the central shaft including a pair of members perpendicular to the shaft with a cam follower attached to each member; and
- (b) a sloped cam surface forming an arc along a first face of the first junction plate, an opposing sloped cam surface forming an arc along a second face of the first junction plate, the cam followers configured to ride on the sloped cam surfaces to move the first junction plate axially along the central shaft when the central shaft is rotated while the flange on the central shaft restricts axial movement of the second junction plate with respect to the central shaft.

13. The apparatus of claim 12 further comprising a second pair of cam followers attached to the shaft and a second pair of sloped cam surfaces each forming an arc along a face of the first junction plate.

14. The apparatus of claim 12 wherein the sloped cam surface forms an arc of about 120 degrees.

15. The apparatus of claim 12 further comprising a sleeve on the second junction plate adjacent the flange.

16. The apparatus of claim 12 further comprising a guide pin attached to one of the junction plates and an aperture configured to receive the guide pin on the other junction plate.